WHAT IS CLAIMED IS:

1. A magneto-resistance effect type composite head comprising:

a first magnetic shield and a second magnetic shield successively layered on a slider;

a reproduction head including a magneto-resistance effect element (hereinafter, referred to as an MR element) arranged between said fist and said second magnetic shields; and

a recording head arranged adjacent to said reproduction head so as to use said second magnetic shield as a first magnetic pole film and having a second magnetic pole film opposing to said first magnetic pole via a magnetic gap;

said MR element comprising:

a center region including a ferromagnetic tunnel junction magneto-resistance effect film (hereinafter, referred to as a TMR film) having: a first ferromagnetic layer and a second ferromagnetic layer for generating a magneto-resistance effect using said first and said second magnetic shields as electrodes so that a current flows in a an almost vertical direction between said first and said second magnetic shields; and a tunnel barrier layer provided between said first and said second ferromagnetic layer; and

an end region arranged to sandwich said center region from both sides for applying a bias magnetic field to said center region.

2. A magneto-resistance effect type composite head as claimed in Claim 1, wherein said TMR film includes an undercoat layer, said first ferromagnetic layer, said tunnel barrier layer, said second ferromagnetic layer, and an antiferromagnetic layer successively formed in this order.

3. A magneto-resistance effect type composite head as claimed in Claim 1, wherein said TMR film includes an undercoat layer, an antiferromagnetic layer, said first ferromagnetic layer, said tunnel barrier layer, said second ferromagnetic layer, and a non-magnetic conductive layer successively formed in this order.

4. A magneto-resistance effect type composite head as claimed in Claim 2, wherein said antiferromagnetic ~~film~~ layer is made from an alloy containing as a main content Mn-X, wherein X represents at least one element selected from a group consisting of Cr, Fe, Co, Ni, Tc, Ru, Rh, Pd, Re, Os, Ir, and Pt.

5. A magneto-resistance effect type composite head as claimed in Claim 3, wherein said antiferromagnetic ~~film~~ layer is made from an alloy containing as a main content Mn-X, wherein X represents at least one element selected from a group consisting of Cr, Fe, Co, Ni, Tc, Ru, Rh, Pd, Re, Os, Ir, and Pt.

5 6. A magneto-resistance effect type composite head as claimed in Claim 2, wherein said undercoat layer contains as a main content at least one element selected from a group consisting of Ti, V, Cr, Mn, Fe, Co, Ni, Cu, Zr, Nb, Mo, Tc, Ru, Rh, Pd, Hf, Ta, W, Re, Os, Ir, Pt, and Si.

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7 7. A magneto-resistance effect type composite head as claimed in Claim 4, wherein said undercoat layer contains as a main content at least one element selected from a group consisting of Ti, V, Cr, Mn, Fe, Co, Ni, Cu, Zr, Nb, Mo, Tc, Ru, Rh, Pd, Hf, Ta, W, Re, Os, Ir, Pt, and Si.

8 8. A magneto-resistance effect type composite head as claimed in Claim 1, wherein said first and said second ferromagnetic layers are formed from Fe, Co, or Ni, or an alloy containing Fe, Co, or Ni.

9 9. A magneto-resistance effect type composite head as claimed in Claim 2, wherein said first and said second ferromagnetic layers are formed from Fe, Co, or Ni, or an alloy containing Fe, Co, or Ni.

10 10. A magneto-resistance effect type composite head as claimed in Claim 3, wherein said first and said second ferromagnetic layers are formed from Fe, Co, or Ni, or an alloy containing Fe, Co, or Ni.

11 11. A magneto-resistance effect type composite head as claimed in Claim 1, wherein said magnetic shields are

made from a soft magnetic alloy containing as a main content Fe, Co, or Ni.

12. A magneto-resistance effect type composite head as claimed in Claim 1, wherein said magnetic shields are made from an amorphous soft magnetic alloy containing as a main content Co-M, wherein M represents at least one element selected from a group consisting of Ti, V, Cr, Fe, Ni, Cu, Zr, Nb, Mo, Tc, Ru, Rh, Pd, Hf, Ta, W, Re, Os, Ir, Pt, Si, and Al.

13. A magneto-resistance effect type composite head as claimed in Claim 1, wherein said magnetic shields are made from a soft magnetic alloy containing as a main content T-A-B, wherein T represents at least one element selected from a group consisting of Fe, Co, and Ni; A represents at least one element selected from a group consisting of Ti, V, Cr, Cu, Zr, Nb, Mo, Ru, Rh, Pd, Hf, Ta, W, Re, Os, Ir, Pt, Si, and Al; and B represents at least one element selected from ~~a group~~ a group consisting of C, N, and O.

14. A magneto-resistance effect type composite head as claimed in Claim 1, wherein said magnetic shields are made from a soft magnetic alloy containing as a main content Fe-Si-Al.

15. A magneto-resistance effect type composite head as claimed in Claim 1, wherein an electrically connected area between said TMR film and said second magnetic

shield is equal to or smaller than an area of said TMR film opposing to said second magnetic shield.

16. A magneto-resistance effect type composite head as claimed in Claim 1, wherein an insulator is provided on a junction surface between said center region and said end region.

17. A magneto-resistance effect type composite head as claimed in Claim 1, wherein said end region includes a non-magnetic insulation film, a permanent magnet film, and a non-magnetic film successively arranged in this order.

18. A magneto-resistance effect composite head production method comprising steps of:

forming a first magnetic shield on a slider;

forming a ferromagnetic tunnel junction magneto-resistance effect (hereinafter, referred to as TMR) element having a center region constituted by a TMR film and an end region for applying a bias magnetic field to said TMR film; and

forming a second magnetic shield;

said TMR element forming step including steps of: forming said TMR film, forming a photo-resist mask on said TMR film, patterning said TMR film by said photo-resist mask, and lifting-off said end region by said photo-resist mask.

19. A magneto-resistance effect type composite head production method as claimed in Claim 18, said method

further comprising after said TMR film forming step, a step for forming an insulation film arranged to cover said TMR element and patterned to determine a reproduction track width in said center region.

20. A magneto-resistance effect type composite head production method as claimed in Claim 19, wherein said patterned insulation film forming step includes: a step of forming an insulation film, a step of forming a photo-resist mask on said insulation film, and a step of lifting-off said insulation film by said photo-resist mask.